

Cat Toy

BACKGROUND OF THE INVENTION

1. Technical Field

[01.00] This invention relates generally to pet supplies, and more particularly to a toy for stimulating and exercising cats.

2. Description of Related Art

[02.00] Cat toys help keep cats occupied, exercised, and out of trouble. In addition, cat owners enjoy watching their cats play. For these and other reasons, many cat toys are commercially available at pet stores and other retail outlets. However, the right combination of cat-attracting, owner-pleasing, and child-safe attributes remain somewhat elusive and so a need exists for a better cat toy.

SUMMARY OF THE INVENTION

[03.00] This invention addresses the need outlined above by providing a motorized wand from which a cat-attractive object is tethered. An electronic circuit starts and stops rotation of the wand about a motor-supporting structure at various times and at adjustable speeds. The cat is kept busy, exercised, and out of trouble with an owner-pleasing apparatus that is safe for children to use.

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[04.00] To paraphrase some of the more precise language appearing
in the claims and further introduce the nomenclature used, a cat toy
apparatus constructed according to the invention includes a base and
5 a motor-supporting structure on the base. An electric motor within
the motor-supporting structure rotates an object-holding arm that
extends upwardly and radially outwardly from the motor-supporting
structure to a cat-attractive object that is connected by a flexible line
to the arm.

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[05.00] The base has a hollow interior. The motor-supporting
structure also has a hollow interior that extends along a central axis.
With the base resting on a horizontal support surface, the
motor-supporting structure extends upwardly from the base with the
15 central axis disposed vertically and the electric motor aligned with
the central axis.

[06.00] The object-holding arm is connected to the motor. It includes
an elongated member having a proximal end portion connected to the
20 motor and a distal end portion disposed upwardly and radially
outwardly from the motor-supporting structure. The cat-attracting
object is connected with the flexible line to the distal end portion of
the object-holding arm. An electronic circuit in the base serves as
means for powering the electric motor in order to rotate the
25 object-holding arm and thereby move the cat-attracting object about
the motor-supporting structure.

1 [07.00] In one embodiment, the electronic circuit includes means for
enabling a user to select a running time after which the electric
circuit automatically turns the electric motor off, means for enabling
a user to select a speed at which the electric motor operates, and
5 means for automatically reversing motor direction at various time
intervals. The electronic circuit may also include means for
detecting a cat in close proximity to the apparatus and for
automatically turning the electric motor on upon so detecting the cat.

10 [08.00] Preferably, the cat toy apparatus includes at least four
base-stabilizing members on the base that are rotatable by a user
from deployed positions, in which the base-stabilizing members
extend outwardly from the base, to storage positions in which the
base-stabilizing members are retracted from the deployed positions.
15 In addition, the base includes an upper side, the electronic circuit
includes a circuit-controlling knob, and cat-ear-depicting graphics
cat-eye-depicting graphics and cat-whisker-depicting graphics on the
upper side of the base that combine with the circuit-controlling knob
to depict a cat face for which the circuit-controlling knob depicts a cat
20 nose. Furthermore, the motor includes a rigid shaft extending
upwardly and radially outwardly from the motor-supporting structure
to a terminal end portion of the rigid shaft, and the object-holding arm
includes a slender, plastic wand that is adapted to be removable
attached to the terminal end portion of the rigid shaft in slide-on
25 engagement of the terminal end portion in order to facilitate arm
replacement.

1 [09.00] Thus, the invention provides a cat toy apparatus having just
the right combination of cat-attracting, owner-pleasing, and
child-safe attributes. The following illustrative drawings and detailed
description make the foregoing and other objects, features, and
5 advantages of the invention more apparent.

BRIEF DESCRIPTION OF THE DRAWINGS

10 [10.00] FIG. 1 of the drawings is an isometric view of a cat toy
apparatus constructed according to the invention;

[11.00] FIG. 2 is a bottom plan view of the base portion of the
apparatus showing the retracted storage position of one of the
15 base-stabilizing members with phantom lines;

[12.00] FIG. 3 is a back elevation view of the apparatus with the
object-holding arm foreshortened for illustrative purposes;

20 [13.00] FIG. 4 is an enlarged front elevation of the cat toy apparatus
with the base and motor-supporting structure in cross section as
viewed in a vertical plane containing a line 4-4 in FIG. 1; and

[14.00] FIG. 5 is a diagrammatic representation of the electronic
25 circuit that powers the motor used to rotate the object-holding arm

1 and thereby move the cat-attracting object about the
motor-supporting structure.

5 DESCRIPTION OF THE PREFERRED EMBODIMENTS

[15.00] FIGS. 1-5 of the drawings show various aspects of a cat toy
apparatus constructed according to the invention in the form of a cat
toy 10. Generally, the cat toy 10 includes a base 11, a
10 motor-supporting structure 12, and an object-holding arm 13. The
base 11 supports the rest of cat toy 10 upon a floor or other
horizontal surface 14 (FIG. 3); the structure 12 houses an electric
motor 15 (FIGS. 4 and 5), and the arm 13 holds a cat-attracting
object 16 on a terminal end 17A (FIG. 1) of a cord or other flexible
15 line 17 (FIGS. 1 and 5).

[16.00] The base 11 (e.g., a molded plastic component) has an
upper side 18 (FIGS. 1, 3, and 4), an underside 19 (FIGS. 2, 3,
and 4), and a hollow interior 20 (FIG. 4). The base 11 includes four
20 stabilizing members in the form of four stabilizing bars 21, 22, 23,
and 24 (e.g., molded plastic). They are generally similar, each being
mounted pivotally on the underside 19 of the base 11 with a
spring-biased retainer, such as the spring-biased retainer 25 of the
stabilizing bar 21 that is identified in FIG. 4.

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1 [17.00] That arrangement enables a user to pivot the stabilizer
bars **21-24** from the deployed positions illustrated in FIGS. **1-4**, in
which the stabilizing bars **21-24** extend outwardly from the base **11**
for base-stabilizing purposes, to retracted storage positions in which
5 the stabilizing bars **21-24** are pivoted inwardly out of the way. In the
retracted storage position of the stabilizer bar **21**, for example, the
stabilizer bar **21** is disposed as illustrated in FIG. **2** by phantom lines
identified at reference numeral **21A**. The base **11** includes four
rubber feet **26, 27, 28, and 29** that the stabilizer bars **21-24** can clear
10 when pivoted, by operation of the spring-biased retainer **25** for the
stabilizing bar **21** and similar spring-biased retainers for the other
stabilizing bars **22-24**.

[18.00] An electronic control circuit **30** located with the hollow
15 interior **20** of the base **11** (FIG. **4**) is powered by three
batteries **31** that are accessible by removing a battery cover **33**
shown in FIG. **2**. The circuit **30** powers the electric motor **15** as
described in more detail further on in this description. It functions as
means for powering the electric motor **15** so that the motor **15** rotates
20 the arm **13** and thereby moves the object **16** about the structure **12**.
The motor **15** may take any of various forms, including various
commercially available servo or control motors. It includes a rigid
curved tail **34** (e.g., a curved metal shaft) that rotates when power is
supplied to the motor **15**, and that imparts motion about the
25 motor-supporting structure **12** to move the cat-attracting object **16**.

1 [19.00] The motor-supporting structure 12 (e.g., molded plastic) has
a central axis 35 and a hollow interior 36 (FIG. 4) extending along
the central axis 35. It is "motor-supporting" in that it supports
the motor 15 atop the base 11 in alignment with the central axis 35.
5 The motor 15 occupies a position within the hollow interior 36 such
that the motor 15 (i.e., the rotational axis of the motor 15) is aligned
with the central axis 35, with the tail 34 extending upwardly beyond
the structure 12 and radially outward relative to the central axis 35
to a distal end portion 34A of the tail 34 that is identified in FIG. 1.
10 The motor-supporting structure 12 is connected to the base 11 and
so arranged that with the base 11 resting on a horizontal support
surface 37 (FIG. 3), the motor-supporting structure 12 extends
upwardly from the base 11 with the central axis 35 disposed
vertically. As the motor 15 and the tail 34 rotate, the cat-attracting
15 object 16 orbits the support 12 and the central axis 35.

[20.00] The object-holding arm 13 includes a slender, somewhat
bendable, elongated member 38 (e.g., plastic) that is also referred to
herein as a wand. The arm 13 is "object-holding" in that it holds the
20 object 16 via the line 17. It has a proximal end portion 39 connected
to the motor 15 (i.e., the tail 34 of the motor 15) and a distal end
portion 40 disposed upwardly and radially outwardly from
motor-supporting structure 12. The flexible line 17 is connected to
the distal end portion 40. The proximal end portion 39 of the
25 member 38 is hollow and opens proximally to form a female

1 component that is adapted to be removably attached to the terminal
end portion **34A** of the rigid shaft **34** (the male component) in
slide-on engagement of the terminal end portion **34A**. It slides tightly
5 off when tugged upon for a quick disconnection that facilitates
replacement of the object-holding arm **12**. The user can readily
replace the arm **12** with any of various substitute arms having
different cat-attracting objects (not shown). With further regard to
the object **16**, it is "cat-attracting" in that it is larger than a
10 penny (e.g., a 1.5-inch diameter fuzzy plastic ball with trailers
extending from it) and it weighs less than a couple ounces (preferably
less than an ounce) so that is easily moved by the motor **15** and
attracts the attention of a cat. Substitute arm-and-object assemblies
may be provided so that the user can pick out and use a favorite
15 color and design.

[21.00] As an idea of size, the illustrated cat toy **10** has a circular
portion of the base **11** measuring about seven inches in diameter. In
their deployed positions, the stabilizing bars **21-24** extend outwardly
20 from the rest of the base **11** about three inches. The support **12**
stands about four inches upwardly beyond the upper side **18** of the
base so that the support **12** extends to about six inches above the
horizontal support surface **37** shown in FIG. 3. In addition, the tail **34**
extends about three and one half inches beyond the support **12**, and
25 the elongated member extends about twelve inches beyond that, with
the line **17** measuring about ten inches long. Of course, those

1 dimensions may vary. A cat toy may be constructed according to the
inventive concepts described in any of various sizes.

5 [22.00] Turning now to FIG. 5, it shows further details of the
electronic control circuit 30. The circuit 30 is powered by the
batteries 31 and functions as means for powering (i.e., controlling)
the motor 15 according to input from a user via an On/Off button 41,
a timer button 42, and a speed-controlling knob 43 connected to a
variable resistor 44. In other words, the circuit 30 functions as
10 means for powering the motor 15 in order to rotate the object-holding
arm 13 and thereby move the cat-attracting object 16 about the
motor-supporting structure 12 (preferably in a haphazard manner that
is unpredictable to a cat). Input to the circuit 30 is also provided by
a sensor 45 that functions as means for detecting a cat in close
15 proximity to the cat toy 10 in order to automatically turn the circuit 30
on and power the motor 15 when the presence of a cat is so
detected.

20 [23.00] One of ordinary skill in the art may use well-known
components and circuit design techniques for an electronic control
circuit that controls the motor 15 as desired. The illustrated
circuit 30 is adapted to function as means for enabling a user to
select a running time after which the electric circuit automatically
turns the electric motor off. After turning the circuit 30 on with the
25 On/Off button 41, the user depresses the timer button 42 a selected
number of times (up to a maximum of eight times), each depression

1 causing the circuit 30 to power the motor 15 for a fifteen-minute
interval so that a total of eight depressions, for example, results in
the circuit 30 powering the motor 15 for two hours. If the timer
button 42 is not depressed after turning on the circuit 30, the unit
5 continues to run until the user turns it off or the batteries drain
sufficiently.

[24.00] The circuit 30 is also adapted to function as means for
enabling a user to select a speed at which the electric motor
10 operates. The user turns the speed-controlling knob 43 and the
circuit 30 powers the motor 15 accordingly. In addition, the circuit 30
is adapted to function as means for automatically reversing the
direction of the motor 15 (i.e., reversing motor direction) at various
times. One of ordinary skill may use well-known circuit elements and
15 circuit design techniques to accomplish that operational
characteristic. Reversing the motor 15 at various times cause the
cat-attracting object 16 to dance about in a manner provocative to
cats.

20 [25.00] In order to make the cat toy 10 even more attractive to
children, graphics are provided on the upper surface 18 of the
base 11 (FIG. 1). Thus, the base 11 includes cat-ear-depicting
graphics 51, cat-eye-depicting graphics 52, and
cat-whisker-depicting graphics 53 on the upper side 18. They

1 combine with the circuit-controlling knob 43 to depict a cat face.
The knob 43 depicts a cat nose.

[26.00] Thus, the invention provides a cat toy apparatus having just
5 the right combination of cat-attracting, owner-pleasing, and child-safe
attributes, and it can be configured for use as a hunting decoy. It
includes a support structure that is adapted to rest upon a horizontal
support surface with its central axis disposed vertically. A motor
assembly on the support structure includes an electric motor and an
10 electronic circuit for powering the electric motor. An elongated
member has a proximal end portion connected to the motor and a
distal end portion from which an object is tethered by a flexible line.
The motor assembly is adapted to function as means for rotating the
elongated member in order to thereby move the object about the
15 central axis of the support structure for purposes of attracting the
attention of an animal, preferably moving the object with haphazard,
unpredictable movement that cats and/or other animals find enticing.
Although an exemplary embodiment has been shown and described,
one of ordinary skill in the art may make many changes,
20 modifications, and substitutions without necessarily departing from
the spirit and scope of the invention.

[27.00] What is claimed is: